

4. The cell M_3 , or fifth posterior (cell in the forks of the cubitus, according to the nomenclature proposed by me for the Nemestrinidæ), is present, and rather widely open at the apex.

5. The cubital cell (Comst. and Needham) is also open at the apex.

It has been shown by Mr. C. W. Johnson (Ent. News, 1897, p. 118) that the presence of the fifth posterior cell is not a generic character in this group, since in *D. rufithorax* it is present or absent, without even specific difference.

Hab.—*D. revelata* is from the Miocene shales of Florissant, Colorado, at Station 14 (*W. P. Cockerell*, 1907). I submitted a drawing of this species to Prof. A. L. Melander, and it is to him that I am indebted for the suggestion that the species belongs to *Dialysis*. It is remarkable for its large size, and some venational characters above indicated, but I cannot find any sufficient reason for regarding it as another genus. The characteristic flexure of R_4 is exactly as in *Dialysis*.

This is the first American fossil Leptid. Of Leptidæ in the broad sense (including Xylophagidæ) numerous species have been described from Baltic amber, but only one (*Xylophagus pallidus*, Heer.), from other rocks, namely, from Aix. All of the European fossil Leptids are from the Oligocene.

NOTES ON TENTHREDINOIDEA, WITH DESCRIPTIONS OF NEW SPECIES.

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PAPER I (SPECIES FROM COLORADO).

The term middle fovea is used in these descriptions, and I expect to use it from now on, for the fovea between the antennæ. This is what Mr. C. L. Marlatt (Rev. of the Nematinae of N. Am., Tech. Ser., No. 3, Dept. of Agriculture) calls the antennal fovea. The term antennal fovea in my descriptions from now on will mean the fovea at the base of each antenna. "Ocellar basin" is the basin in which the lower ocellus is placed. "Middle carina" is the carina that is sometimes found between the antennæ.

I am greatly indebted to Prof. C. P. Gillette for the loan of the Saw-flies belonging to the Colorado Agricultural College. Also to Prof. T. D. A. Cockerell for many valuable suggestions, and to Dr. A. D. MacGillivray for permission to describe some Saw-flies which he had named in manuscript.

It is my plan to have a series of papers on Saw-flies, in some cases giving notes and descriptions of new ones, and in others giving tables of the species of America, north of Mexico.

Euura brachycarpæ, n. sp.—♀. Length about 5 mm. Head with a few fine punctures on vertex. Clypeus shallowly emarginate, lobes broad, rounded, antennal foveæ large and deep; middle fovea (antennal fovea of Marl. Rev. Nematinae of N. Am.) elongate, well defined, ocellar basin shallow, better defined by the lower wall; a slight depression around each lateral ocellus; 2nd, 3rd, 4th, 5th joints of antennæ subequal; thorax smooth, shining; tarsal claws cleft, rays subequal; intercostal vein its own length before basal; discal cells of hind wings equal on the outer margin, the lower one is much broader than the upper; sheath broad, rounded on lower apical margin; cerci long and slender; apex of abdomen and sheath with long white hairs. Colour shining black; mandibles, except apex, which is piceous, labrum, edge of clypeus, tegulæ, small spot on angle of pronotum; legs, except bases of coxæ and a line on femora, beneath clear reddish-yellow; apex of venter is sometimes piceous; wings hyaline; nervures brown; costa and base of stigma pallid.

The ♂ does not differ much from the ♀; the apical joints of the antennæ are rufous, the costa is darker, the femora are usually darker, the posterior are sometimes piceous, and the posterior tarsi are usually infusate.

One ♀ has the posterior and upper orbits ferruginous, and the superclypeal area and whole of clypeus reddish-yellow. The upper orbits in a good many specimens are rufous.

Hab.—Florissant, Colo., between June 16 and July 24, 1907, but mostly on July 7, '07, when the type was collected. "On *Salix brachycarpæ*" (S. A. Rohwer). An *Euura* gall, common on this *Salix* at Florissant, and the only one I found there is much like *Euura salicis-ovum*, and I think it must be the gall of *Euura bachycarpæ*, although no adults were raised.

This species is most nearly related to *E. albiricta*, Cress., but may be known from that species by being larger, having no testaceous spot between eyes, the posterior angle of pronotum being reddish-yellow, and the black of the femora in the ♀ being a line beneath.

Euura parva, n. sp.—♀. Length about $3\frac{1}{2}$ mm. Head with small, rather dense punctures, vertex rounded; clypeus circularly emarginate, lobes broad, rather pointed; antennal foveæ rather deep, longer below antennæ; middle fovea elongate open at the top; ocellar basin very shallow at the top, but fairly distinct nearer the antennæ; 3rd and 4th

joints of the antennæ equal, next two equal and the last three subequal; thorax with fine dense punctures above, smooth beneath and on sides; tarsal claws minutely cleft, rays equal; venation normal, lower discal cell wider than upper, the lower and upper equal on outer margin; sheath broad, rounded on lower apical margin; cerci long and rather stout; sheath clothed at apex with hairs. Colour dark brownish; clypeus, labrum, mandibles, except tip, cheeks, orbits, tegulæ, posterior angles of pronotum, all of the legs, venter and sheath reddish-yellow, the abdomen above of the paratype is pale piceous; antennæ beneath and apical joints dull ferruginous, wings hyaline, nervures pale brown, costa and base of stigma paler.

Hab.—Ft. Collins, Colo. Type collected April 24, 1906; paratype May 21, 1906.

This species seems quite distinct, and is easily distinguished by its small size from all except *albiricta*, Cress., from which it may be known by the more abundant pale markings.

Cephaleia punctata, n. sp.—♀. Length about 12 mm. Head almost as wide as thorax, much broader above than beneath; eyes placed well forward; vertex very broad, flat; a broad low carina between antennæ and on basal part of clypeus; clypeus truncate, broader on the lower part; left mandibles tridentate, right bidentate, inner tooth largest; antennæ long, slender, extending somewhat past the base of abdomen, first joint wider and about three times as long as second, third longer than four + five; ocellar region with dense deep punctures; vertex and sides of head with deep, scattered punctures; lateral lobes of mesonotum and scutellum with deep, scattered punctures, similar to those on the head; mesepimera with deep punctures on lower and extreme upper part, the middle somewhat corrugated; metathorax and abdomen smooth; claws with an inner tooth about one-third from apex; four hind tibiæ with a pair of spurs about one-fourth (or more) from apex, and another single spur about a fourth above these; second transverse cubital uniting with radius about one third of its length beyond transverse radius. Colour shining black; anterior margin of clypeus, a line in middle, inner orbits broadly, large spot on upper inner orbit, cheeks, broad band on side of head, extending from cheeks to occiput, where it joins with a crescent formed by a line from top of eye to occiput, then curving downward, crescents uniting, the lower outside part of crescent is a thin line, so that on one side there is a break, two large elongate spots on vertex (the

heavier marking of the vertex and occiput together form a sort of M, the outer lines being heavier), posterior margin of pronotum, tegulæ, triangular spot on anterior lobe of mesonotum, posterior and lateral half of lateral lobes of mesonotum and base of scutellum, these form a broad U, to lines on under side of prothorax, broad band on mesepimera, line above posterior coxæ, light yellow; abdomen, except a black spot on apex of venter around sheath, and sheath, legs from apex of femora, mandibles, antennæ from first to about twelfth joint, rufous. Wings somewhat fuscous, a band from base of stigma across wing to the apex of second discoidal cell and posterior margin fuscous; nervures brown, stigma at apex and base of costa lighter.

Habitat.—Florissant, Colo., July 12, 1907. (S. A. Rohwer.)

This species may easily be separated from the other members of this genus (*C. Canadensis*, Nort.; *C. Quebecensis*, Prov., and *C. ochreipes*. Konow gives *ochreipes* as a syn. of *Canadensis*, but I believe it to be distinct) by the triangular and U-shaped spots on upper side of mesothorax. I have gone through all the descriptions of the N. Am. species of the genus *Lyda* in the Cressonian sense, and it is none of those, although in coloration it is nearer some species assigned by Konow to other genera than that in which this species is placed. It belongs to the sub-genus *Cephaleia*, as given by Konow in the "Genera Insectorum."

Emphytus Gillettei, n. sp. (= *E. Gillettei*, MacG., M.S.).—♀. Length about 8 mm. Form similar to *E. mellipes*. Head smooth, with a few small punctures; ocellar basin with sloping walls, almost united with the middle fovea, the walls of which are not as sloping; antennal ridge prominent, extending into clypeus; clypeus deeply, angularly emarginate, as long as the second joint of antennæ; a furrow from base of each antenna to occiput; a furrow between lateral ocelli; middle fovea large; four apical joints of antennæ constricted at base, third joint a trifle the longest, four and five subequal; thorax, in general, punctured like head; angles of pronotum, scutellum and postscutellum with denser and larger punctures; lower part of pronotum and a spot on mesepimera at side irregularly roughened; first joint of tarsi as long or a little longer than 2+3; inner claw tooth long, making the claws look bifid; transverse radial curved, received in middle of cell; second recurrent nervure in basal third of second cubital; lanceolate cell of hind wings shortly petiolate at apex; abdomen with fine, rather dense punctures; sheath broad, obtusely pointed at apex above, rounded beneath. Colour black;

apical joints of antennæ and mandibles, except base, dark rufous ; tegulæ, cenchri, spot on middle of basal plates above, two spots on fourth abdominal segment above (these spots are sometimes confluent and form a band above), trochanters, extreme apex of posterior coxæ, a small band on posterior tibiæ at base, white ; palpi, anterior tibiæ and tarsi beneath, intermediate tibiæ and tarsi beneath somewhat, pallid or pale testaceous ; posterior femora, tibiæ and tarsi yellow-red ; tibiæ and tarsi infuscated ; pleura with short white hair. Wings dusky-hyaline ; nervures and stigma dark brown.

Habitat.—Colorado, May 21, 1901 ; also specimens from Denver, Colo., May 30, 1902, and one from Boulder, Colo., May 17, 1902. (S. A. Johnson.) Specimens and type in collection of Colo. Ag. College.

The posterior legs are sometimes darkened, but there is always a strong rufous tinge. The sculpturing of the head varies somewhat, but the markings are always present, although sometimes faint.

This species seems to fall between *E. mellipes*, Harris, and *E. cinctipes*, Nort. It may be known from *E. mellipes* by the dark, almost entirely black, four anterior legs, the white on the fourth abdominal segment not going all the way round, etc. From *E. cinctipes* by having the posterior femora and tibiæ yellow-red, stigma unicolour, etc.

Emphytus Coloradensis, Weldon.—(CAN. ENT., Sept., 1907, p. 304.) The following notes may be useful in determining this remarkable species. They were made from the type, which is a male. Head densely punctured ; clypeus emarginate ; antennæ stout, joints somewhat rounded out beneath, rather short, malar space distinct ; thorax punctured, but not as densely so as head ; claws simple ; transverse radial joining the radial nervure beyond the second transverse cubitus ; wings subhyaline. Length about 5 mm.

This species is quite distinct from all American ones.

Habitat.—Little Beaver Creek, Larimer Co., Colorado, July 4, 1896 (C. P. Gillette). "Taken above timber line, 11,500 ft. altitude."

Hoplocampa bioculata, n. sp. (= *H. bioculata*, Macg., M.S.), ♀. Length about 5 mm. Head not as wide as thorax ; vertex rounded ; covered with very small dense punctures ; antennæ placed in two deep, large foveæ, which extend to clypeus ; the middle fovea small, but quite distinct ; third, fourth and fifth antennal joints subequal ; clypeus broadly, angularly emarginate, lobes broad, rounded ; labrum rounded at apex ; thorax with fine dense punctures above, almost smooth beneath ; intercostal vein more than its own length basal to basal vein ; lanceolate cell

of hind wings longly petiolate at apex ; upper discal cell extending beyond lower ; claws simple, first tarsal joint of intermediate legs nearly as long as joints 3 + 4 + 5 ; sheath broad at base, pointed at apex above, rounded below. Colour black ; clypeus, labrum, mandibles, except at apex, lower orbits and tegulæ, luteous ; palpi, spot on upper orbits, antennæ beneath, tibiæ and tarsi reddish-brown (the density of this colour varies somewhat) ; anterior femora sometimes the colour of the tibiæ. Wings hyaline ; nervures and stigma pale brown, stigma lighter in middle.

Habitat.—Dixon Canon, Larimer Co., Colo., May 9 (C. P. Gillette) ; also specimens from Ft. Collins, Colo., May 11, 1899 ; 2 ♀'s, Foothills, near Ft. Collins, Colo., May 15, 1897, flowers of *Amelanchier alnifolia* (C. P. Gillette) ; 1 ♀, Dixon Canon, Colo., May 6, 1894 (C. F. Baker).

This species is quite distinct. It seems nearest to *H. obtusa*, Klug., from Georgia, from which it may easily be separated by the colour of the basal plates, etc.

Lycasta fusca, n. sp. (= *L. fusca*, MacG., M.S). ♂. Length, 6 mm. Head a little wider behind eyes ; vertex broad ; malar space distinct ; clypeus broadly emarginate, lobes small, pointed ; labrum slightly emarginate ; superclypeal space depressed into a furrow ; middle fovea distinct, broadening above, where it is joined by two furrows, which come from inner orbits and extend to vertex ; ocellar basin small, but well defined ; antennæ reaching about to apex of scutellum, third joint distinctly longest, last six subequal ; thorax, as is the head, with fine punctures ; punctures on scutellum and postscutellum well defined ; tarsal claws simple ; transverse radial received in apical third of cell ; lanceolate cell shortly contracted, or with a very short broad cross nervure ; lanceolate cell of hind wings petiolate at apex ; abdomen with irregular small punctures ; seventh ventral segment broadly rounded at apex. Colour black ; face below antennæ, pleura and legs with sparse, short gray hair ; antennæ with very short, sparse gray hair ; in two specimens the anterior tibiæ and tarsi are pallid beneath, infuscated. Wings dark fuscous, shining in certain lights with green and crimson ; nervures and stigma black.

Habitat.—Ft. Collins, Colo., June 4, 1899 ; also June 4, 1901, and Horsetooth Gulch, Larimer Co., Colo., April, 1895 (C. P. Gillette and C. F. Baker). Collection of Colo. Agric. College.

This species is quite distinct from all other members of the genus, and may be easily known by being entirely black.